ABSTRACT

An ultrasonic imaging catheter apparatus and a method of using the same to scan the inner wall of a body lumen. The ultrasonic imaging catheter apparatus comprises: (a) a flexible elongate element adapted for insertion into a body lumen, the elongate element having distal and proximal ends; (b) an ultrasonic transducer generating and detecting ultrasonic energy disposed proximate the distal end of the elongate element; (c) a reflective member disposed proximate the ultrasonic transducer and optionally rotatable with respect to an axis of the body lumen, wherein the reflective member is adapted to reflect (i) ultrasonic energy generated by the ultrasonic transducer to a wall of the body lumen and (ii) ultrasonic energy reflected by the wall back to the transducer; and (d) an actuator, for example, an electroactive polymer actuator, adapted to change the angle of incidence of the ultrasonic energy relative to the reflective member.